REMARKS

Claims 4, 5, 12 and 13 are cancelled without prejudice or disclaimer. Therefore, claims 1-3, 6-11 and 14-16 are the claims currently pending in the Application.

Objection to Claim 14

Claim 14 is objected to because of a minor error contained therein.

Claim 14 is amended. Therefore, this objection should now be withdrawn.

Rejection of Claims 10-16 under 35 U.S.C. § 101

Claims 10-16 are rejected under 35 U.S.C. § 101 as being allegedly directed to non-statutory subject matter. This rejection is traversed.

Pursuant to recent Federal Circuit case law, the claims are believed to be directed to statutory subject matter in their present form without amendment. However, in the interest of expediting prosecution of the present Application, the claims are amended. Therefore, the rejection should now be withdrawn.

Rejection of Claims 1-7 and 10-16 under 35 U.S.C § 102

Claims 1-7 and 10-16 are rejected under 35 U.S.C § 102 as being anticipated by Burge (Peter Burge and John Shaw-Taylor, "Detecting Cellular Fraud Using Adaptive Prototypes", Proceeding of AI Approaches to Fraud Detection and Risk Management, pages 9-13, 1997). This rejection is traversed.

In the Office Action, the Examiner seems to acknowledge that the present invention discloses several significant features not disclosed by the Burge reference. In particular, the Examiner acknowledges (Office Action, page 17) that:

(1)Burge discloses only continuous variables, but not both categorical and continuous variables;

(2)Burge uses two models in the algorithm, the long-term model and the short-term model, while the present invention unifies them into one model with the aim of a clearer statistical meaning and low computational cost; and

(3) Burge discloses only a non-parametric representation, while the present invention discloses either a parametric representation for probabilistic model or a non-parametric one.

The statistical model used by an apparatus or method according to an aspect of Applicant's claimed is patentably distinguishable from the method described in Burge. Applicant's invention as claimed in independent claims 1, 3, 6, 7, 10, 11 and 14-16 require that a parametric model be used to treat categorical variables.

According to Applicant's claimed invention, in the finite mixture distribution of normal distributions, it is required that the covariance matrices of each normal distribution in the mixture be mutually different. This is reflected in claims 1, 3, 10, 11 and 16. The model described in these claims is based on the view that a mixture of relatively few different normal distributions expresses the complicated distribution.

Independent claims 1, 3, 10, 11 and 16 require, *inter alia*, "a mean parameter and a variance parameter of each of a finite number of normal distribution densities...." and "parameter rewriting means for updating and rewriting means for updating and rewriting the stored parameter values...."

Burge discloses a method in which each kernel distribution is the same distribution as the distribution whose covariance matrix is the integral multiple of a unit matrix. This is because Burge's method is based on the view that accumulation of many simple distributions expresses a complicated distribution in a mixture of kernel distributions. In fact, Burge illustrates the method used therein with the example of a distribution in which 50 kernel distributions are used.

std. deviation is sq. rt. of variance (See p. 11 of Burge)

Burge does not disclose or suggest a mean parameter and a variance parameter of each of a finite number of normal distribution densities, as *inter alia* required by independent claims 1, 3, 10, 11 and 16. Further, Burge does not disclose or suggest "parameter rewriting means for updating and rewriting means for updating and rewriting the stored parameter values...." as further required by independent claims 1, 3, 10, 11 and 16.

Claim 2 depends from independent claim 1, and thus incorporates novel and nonobvious features thereof. Thus, claim 2 is patentably distinguishable over the prior art for at least the reasons that independent claim 1 is patentably distinguishable over the prior art.

Independent claims 6, 7, 14 and 15 are patentably distinguishable over the prior art for reasons analogous to why independent claims 1, 3, 10, 11 and 16 are patentably distinguishable over the prior art.

For at least the following reasons set forth in the foregoing discussion, Applicant believes that the Application is now allowable, and respectfully requests that the Examiner reconsider the rejections and allow the Application. Should the Examiner have any questions regarding this Amendment, or regarding the Application generally, the Examiner is invited to telephone the undersigned attorney.

Respectfully submitted,

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